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ABSTRACT

This study, exploring why first grade children from Rio Grande do Sul, Brazil, fail in school, utilized computerized techniques of statistical analysis to measure the relationships of various school and family characteristics with student achievement. Four types of schools--urban state, rural state, municipal, and private--were used to test the effect of student achievement as measured by parents, supervisors, school, principal, teacher, and class, on the dependent variables of age, and repetition on pass rates and dropout rates. A model for effects on student achievement was said to include three types: school only, parents only, and the interaction of specific parent and school characteristics. The effects of school alone were found to be low for all types of schools, while 75 percent or more of the explained variance in grades in language was based directly or indirectly on measures of the socioeconomic background of the child, such as mother and father's occupation, father's educational level, and the number of textbooks. Two areas of recommendation focused on were: (1) the development of educational policies to improve student achievement by changing internal characteristics such as the distribution of books and improvement of teacher training, and (2) the need for additional research to refine and test further hypotheses arising through the study. (Author/AM)

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WHY CHILDREN FAIL IN FIRST GRADE IN RIO GRANDE DO SUL:

IMPLICATIONS FOR POLICY AND RESEARCH

Laurence Wolff

October 17, 1970

A Report Written for the Human Resources Office of the U.S. Agency for International Development, Rio de Janeiro, Brazil

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I. INTRODUCTION

This study seeks to measure the relationships of various school and family characteristics with student achievement in the first grade of primary schools in Rio Grande do Sul, by the use of computerized techniques of statistical analysis.

The results of this study may aid two processes. The first is that of decision making in primary education, particularly at the level of the Secretariat of Education and Culture of Rio Grande do Sul, as well as the Ministry of Education and Culture of Brazil and various international funding organizations in Brazil. Each of the above organizations are aware of the great needs for improvement in primary education, yet have limited funds to invest. By suggesting the most important factors affecting student achievement in primary schools, this study may aid in the choosing of areas for investment which promise the greatest return in the form of higher student achievement and thus a primary school system which meets the needs of Brazilian society.

The second purpose of this study is to increase our knowledge of the sociology of Brazilian education through survey research and computerized statistical analysis. Sociological knowledge about the educational system is still scanty in Brazil, although several pioneering studies have appeared in the past few years. The use of the computer for multivariate analysis has also recently begun in Brazil. The two purposes noted here are linked, since the improvement of our knowledge of Brazilian education is the basis upon which to improve decision making.

This study is part of a much more ambitious project, entitled "Avaliação do Sistema de Ensino Primário", being carried out by the Center for Educational Research and Orientation (CPOE) of the Secretariat of Education and Culture of Rio Grande do Sul, since 1967, with aid from the National Institute for Pedagogical Studies (INEP) and the Team for Technical Assistance to Primary Education (EATEP, no longer in operation). The purpose of the project was to provide information about the primary school system upon which to base programs for improvement.

The project has various stages. In 1967 the CPOE collected data on all schools and principals, and all teachers and students in first grade, in Pôrto Alegre. The results were published in "Avaliação do Sistema de Ensino Primário, Primeira Etapa, Pôrto Alegre," in 1969. The results were reported in "The EATEP Project: Dropout and Repetition in Brazilian Primary Education (A Report to the National Institute of Pedagogical Studies) by Harry White. This writer made a further analysis of the data in a paper entitled "O Primeiro Ano de Ensino Primário em Pôrto Alegre, Um Estudo Preliminar com Implicações para a Política Educacional."

In 1968 the CPOE collected data on all schools and principals, and all teachers and students in first grade in the entire state of Rio Grande

do Sul. They are now writing their analysis of this data. They supplied a computer tape of this data to the Center for Studies in Education and Development of the Harvard Graduate School of Education; the computer tape forms the basis of this paper.

In the final phase of the project the CPOE collected data in 1969 on all primary schools in the state. This data will be key-punched and computed beginning October, 1970. The results may show the varying effects of the school by grade as well as varying resources in schools by grade. Thus it should be a valuable completion of the project.

This study could not have been done without the cooperation of two persons to whom the writer is greatly indebted: Professor Italia Faraco, head of the CPOE, who helped make the data available, and Frank Taylor, of the Human Resources Office of USAID in Rio de Janeiro, who enabled the work to be supported by USAID.

II. THE BACKGROUND OF THE ANALYSIS

A. The Purpose of the Analysis

This paper is meant to be "explicative". It asks the question, why do children fail in first grade in Rio Grande do Sul, and uses the techniques of computerized statistical analysis to attempt to answer this question.

This paper does not present in detail the distribution of various school and parental characteristics in Rio Grande do Sul. That is, it is not meant to be "descriptive". The CPOE is currently analyzing the data for their descriptive value (as well as working on their explicative value), and should provide valuable information not previously available. The distribution of characteristics by the three educational systems - state, municipal, and private - will show the principal differences between private schools, which have the best record of student achievement, state schools, and municipal schools, which have the worst. The distribution by region of Rio Grande do Sul will show marked inequalities in education, ranging from the least developed areas, probably in the northwest section of the state, to the most developed, probably the area surrounding Pôrto Alegre. The analysis may lead to programs of aid to the poorer regions.

B. Methodology

The principal statistics presented here are those of correlation (Pearson's R) and step-wise multiple regression. Step-wise multiple regression is a particularly valuable technique because it allows us to look at all independent variables together, so that we may account for their interrelationships while at the same time predicting to the dependent variable. In this way independent variables which essentially measure the same factors as other variables can be eliminated from consideration. The "step-wise" method allows us to measure how much each variable improves prediction of the dependent variable, as well as clarifying its relationships with independent variables.

One drawback in the use of correlation and regression is that they need variables with "continuous" scales. In some cases we have taken liberties with the data to construct a "continuous" scale. Thus we recoded teacher's training to reflect the level of training - primary, ginásio, colégio, university - and then entered it into the equation. When the independent variable measures only the presence or absence of some characteristic, such as a librarian or a school lunch, we coded a '1' for presence and '2' for absence of the factor and entered it into the equation. This practice reduces somewhat the significance of the resulting correlation or regression coefficient.

The equations and relationships computed are based only on the

children who were in school at the end of the year, and thus had a grade in language. About 16.2% of the children in the study did not have a grade at the end of the year, either because of dropping out or because of transference to another class or school. The correlation and regression coefficients do not examine these children.

Each of these analysis are done five times, for all schools, then for urban state, rural state, municipal, and private schools. The purpose for this division is that these systems are considered significantly different; as they are administered differently, they require separate results if policy needs are to be derived.

Besides correlation and regression, we developed contingency tables with controls for four types of school and for parents' level of education. Contingency tables are simply another way of trying to slice reality, to come up with a picture of the relationships among variables. They have the advantage of not requiring continuous variables and of being easy to read by the layman. Their drawbacks are that they sometimes underestimate effects, especially when multiple controls are used which reduce the N significantly. Also, they do not enable us to combine independent variables to eliminate redundant effects. In this study we present contingency tables in the appendix to supplement the multiple regression analysis, especially to understand better the key predictors discovered. The CPOE is expected to develop a more complete contingency table analysis.

C. Variables Analyzed

This paper uses most of the variables in the CPOE questionnaire (See Appendix), which was filled out by all first grade teachers in the state. As a measure of student achievement in first grade - the dependent variable - we use the student's grade in language as recorded by the teacher at the end of the year. In the first grade, a pass in language means that the child has learned to read and may thus enter second grade. The variable is coded on a five point scale: (1) very good, (2) good, (3) fair, (4) insufficient, and (5) no progress at all, with codes 4 and 5 signifying that the student has failed to learn to read. The following table shows the extent of the problem of learning to read in first grade:

TABLE 1. PASS IN LANGUAGE FOR CHILDREN IN FIRST GRADE, 1968, BY TYPE OF SCHOOL

Type of School	% Pass in Language
All schools	59.4%
Urban state	61.8%
Rural state	54.5%
Municipal	56.7%
Private	76.0%

One drawback in the use of this variable is its basis on the teacher's opinion only, rather than a standardized test centrally administered. Since it was the only achievement measure available in the questionnaire (besides grade in mathematics), we have had to use it and assume relative homogeneity in standards. This may well be the case, since the state divulges basic standards for all teachers to follow. In the municipios all the teachers in the municipal schools generally use one test written by a group of them. A small follow-up study using standardized tests might be useful to test this assumption.

The independent variables in the multiple regression equation include most of those in the questionnaire which had a scale susceptible to entrance in the equation and which could be considered measures of school or background characteristics of the child's social economic situation.

They include the following:

Background Variables

1. Mother's educational level
2. Father's educational level
3. Father's occupational level
4. Number of textbooks owned by the student

School Variables

5. Doctor (presence in school)
6. Dentist (presence in school)
7. Art teacher (presence in school)
8. Music teacher (presence in school)
9. Gym teacher (presence in school)
10. Librarian (presence in school)
11. Sum of all specialized teachers in the school
12. School lunch (presence in school)
13. Parent teachers association (presence in school)
14. Agricultural club (presence in school)
15. Number of sessions
16. Enrollment in school
17. Enrollment in first grade
18. Supervisor's level of training
19. Supervisor's special courses (length)
20. Supervisor's experience in primary education
21. Supervisor's experience in the job
22. Number of classes supervised by supervisor
23. Principal's level of training
24. Principal's special courses (length)
25. Principal's experience in primary education
26. Principal's experience in the job
27. Principal's experience in first grade
28. Teacher's level of training

29. Teacher's special courses (length)
30. Teacher's experience in primary education
31. Teacher's experience in first grade
32. Number of teachers in the class during the year
33. Number of students in the class
34. Area (square meters) per student
35. Number of class hours per day
36. Attendance of the child in kindergarten

The independent variables include measures of the parents, supervisors, school, principal, teacher, and class. We should note that variable 4 - number of textbooks owned by the student - is a measure of the child's present situation. We propose that it is best considered a measure of the child's economic background. Since schools generally do not supply free textbooks, the variable should measure the parents' economic status - their ability to buy their child the books he needs (as well as, perhaps, their interest in his education). But books may also be a "school" variable, in the sense that the school may be able to supply them, as is sometimes done now when the principal has sufficient funds. The variable on kindergarten (No. 36) may be considered in a similar light, since many kindergartens are private and expensive. On the other hand, attendance in kindergartens is as much a case of availability, since most areas simply don't have them. For this reason we conider kindergartens primarily a measure of the school.

In addition to these variables, we also looked at the effect of age and repetition on pass rates, as well as analyzing other dependent variables, especially whether the child dropped out during the year. Some of these are presented in the appendix.

D. Sample Size

The CPOE sent questionnaires to all primary schools in Rio Grande do Sul. Within these schools the CPOE asked for information on all first grade teachers and students. Thus the research began as a universe of schools and first grade. But the keypunching and processing of all this data would have greatly taxed the resources of the State Computing Center (over 400,000 cards); given the large size of the universe, a good sample would not alter the results very much. It was decided to take a systematic sample of 20% of the students, but retaining the universe of schools and classes.

The tape of this 20% sample was sent to Harvard University. Because of the complex statistical analyses proposed, a further 25% sample was taken at Harvard. Thus the analysis presented here is based on a 5% sample - 20,120 students - of the universe of first graders in Rio Grande do Sul. Since the analysis was based only on those students who took the final examination in language, there was a further reduction of 16.2% in the N.

The 5% sample does not disturb greatly the results in the regression and correlation analysis: a correlation coefficient of .03 is significant at the .01 level. In the contingency table analysis the effect is more serious, since the use of multiple controls often reduces the N in each table to below a statistically acceptable number. This is another reason we concentrate here on regression and correlation.

Here we note that the manner in which the sample was taken produces a very good sample, since we knew the universe and since there was no pooling or grouping. But the sample was very costly in terms of human resources and "paper" - to cover the universe. Teachers throughout the state had to fill in data on all their students, while only 20% were analyzed. A more sophisticated and cheaper sample might have stratified by school and then sent questionnaires only to 20% of the schools.

Most of the analyses were done for four "types" of schools. The percentage of total enrollment in each of these schools at the end of 1968 was: urban state schools, 30.3%; rural state schools, 13.1%; municipal schools, 49.6%; private schools, 7.0%.

III. RESULTS

A. A Model for Effects on Student Achievement

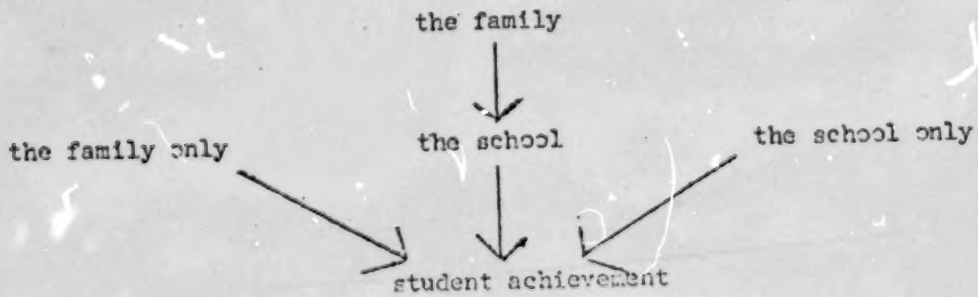
A simple model for effects on student achievement forms the basis of the discussion here and of much of present day sociological research on education.

The model proposes to measure two factors affecting student achievement - the home and the school. A third factor, the child's "innate" ability, will not be analyzed and will be assumed to be randomly distributed among the sample. The influence of the home can be "social" and "economic". A well educated family values education highly, trains their child for entrance to the school, and makes sure that the child is well taken care of in the school. An economically well off family can buy him the books and supplies to benefit from the teaching, as well as feed and clothe him so that he is more capable of attending to the task of learning.

The family also has an indirect effect on the child's learning. The responsible parent seeks out the best schools and demands the best teachers, while teachers and principals themselves gravitate to the schools with children who are easiest to teach. The result is usually that lower class children not only do not come prepared to learn, but also receive an inferior education which tends to confirm the cycle of poverty, ignorance, and more poverty, while middle and upper class children generally receive a superior education.

But the child learns to read in the school, whose teachers, equipment, building, principal and supervisor all combine to create the learning structure presented to the child. We particularly seek the effect of the school independent of the family, since we have only limited control over the family, which can change for a society only after a long period of time.

Thus the model of prediction of student achievement includes three types of effects:



To measure these effects on the student's grade in language we use the statistic of the squared multiple correlation coefficient (Mult R^2), which tells us how much of the variance in grade in language is explained by the

independent variables. By varying the way we enter independent variables into the step-wise equation, we are able to estimate the three types of effects. These are presented below, taking into account only the ten best predictors of grade in language for the four types of schools:

TABLE 2. FRACTION OF VARIANCE IN GRADE IN LANGUAGE EXPLAINED BY PARENTS

	Type of School				
	All schools	Urban state	Rural State	Municipal	Private
School only	.011	.025	.010	.009	.035
School and parents	.012	.012	.011	.005	.044
Parents only	.074	.087	.048	.023	.082
Total	.097	.124	.069	.037	.161

The results show that the percentage of variance in grade in language explained by the ten best independent variables is very low. If all thirty six variables were entered, the improvement would be only slight, about .005. For all schools only about 10% of the variance is explained. Urban state and private schools, at 12% and 16%, do better than rural state and municipal schools, at 7% and 4%.

Some explanations for the low explained variance may be "technical", related to the way the research was gathered. Teachers filled out the questionnaire themselves, with only limited guidance from local supervisors. Thus the error response may be higher than in a study based on interviews and trained personnel who filled out the forms; this will lead to a lower explained variance.

The use of the teacher's estimate of child's grade in language as the dependent variable also must have lowered the percentage of explained variance. Methods of grading may vary from teacher to teacher, school to school, or município to município. Thus some children may be "learning" more than others yet failing the language examination, while others pass. In the study of Pôrto Alegre done last year the regression coefficients for parents and the school with grade in language were two to three times

higher than in this study. Thus there may be a great deal of "noise" when we combine various regions of the state. The measurement of the extent of this problem would depend on giving standardized achievement tests to some children.

More significantly, schools may be relatively homogeneous, especially municipal schools, which are primarily rural, and rural state schools. In rural areas the socio-economic background of the parents also tends to be homogeneous. On the other hand private schools tend to be composed of two types, for the elite and for the poor, and thus exhibit greater heterogeneity.

The effects of the school alone are low for all types. One reason for the low school effect may be that the child in first grade is so much the result of the home. The cumulative effect of the school over time may be greater.

Private schools show a very high relationship in the indirect effects of parents through schools, probably a result of the need for parents to pay for their schools, and thus to control somewhat better the quality of their children's education.

We might argue that the low relative influence of school characteristics shows the extent to which the school reinforces the social structure rather than changes it. The "indirect" effect of the parents through the schools is a particularly strong measure of the extent social factors dominate the school.

B Effects of Specific Parent and School Characteristics

In order to suggest priorities for the educational policy making, we need to look at specific school characteristics. Since the relationships are low, we cannot be sure the proposed policy changes will improve the system a very great deal.

Here we present two ways of estimating the most important characteristics related to grade in language, by simple correlation and by multiple regression coefficient.

The correlation coefficients do not take into account relationships among the independent variables. In the following table we list all the variables with correlations of .10 or better with grade in language. The number of .10 is used simply as an arbitrary cut off point, since correlations as low as .03 are significant. The complete correlation matrix is available in an appendix:

TABLE 3. HIGHEST CORRELATION COEFFICIENTS WITH GRADE IN LANGUAGE

Variable	Type of School				
	All Schools	Urban State	Rural State	Municipal	Private
Mother's educational level	.24	.25	.10	.11	.32
Father's educational level	.22	.23	.15	.11	.31
Number of textbooks owned by students	.20	.22	.19	.12	.20
Father's occupational level	.10	.17			.23
Attendance in kindergarten	.13	.15			.20
Number of teachers in the class		.17			.12
Teacher's experience in first grade		.13			
Teacher's experience in primary education		.10			
Teacher's level of education					.11
Principal's level of education					.10
Presence of school lunch					-.15
Presence of agricultural club					-.14
Total enrollment					.11
Number of classes oriented by supervisor					.11

Criterion for inclusion: correlation coefficient of .10 or higher

The correlations are low, with none of them higher than .32. Among all schools, only five variables of the 36 entered in the equation have correlation coefficients higher than .10. Private schools have 12 variables above .10, followed by urban state schools with eight, and rural state schools and municipal schools, each with only three variables above .10.

The step-wise multiple regression table enables us to eliminate variables which duplicate each other. Among urban state schools, for instance, teacher's experience in primary education is correlated .10 with grade in language, and teacher's experience in first grade is correlated .13 with grade in language. But these two variables are inter-correlated at .65 with each other. Experience in first grade enters the equation first since it is the better predictor of the two.

The following table of multiple regression coefficients is also based on an arbitrary cutoff point, in which only variables which improve the R^2 .002 or more in the step-wise mode are included; for private schools the criterion is .003, because of the large number of variables which meet the lower criterion:

TABLE 4. MOST IMPORTANT COEFFICIENTS IN THE STEP-WISE MULTIPLE REGRESSION WITH GRADE IN LANGUAGE

Variable	Type of School				
	All Schools	Urban State	Rural State	Municipal	Private
Mother's educational level	.14	.13		.06	.16
Father's educational level	.07		.10	.06	.10
Number of textbooks owned by students	.14	.15	.16	.11	.10
Father's occupational level		.05			
Attendance in kindergarten		.04			.10
Number of teachers in the class	.07	.11	.07		.07
Teacher's experience in first grade		.06			
Area per student			-.06		-.06
Numbers of hours in the school day			.05		
Principal s experience in primary education					-.14
Principal's experience in the job					.08
Number of specialized personnel in school				.05	
Presence of agricultural club					-.09
Supervisor's level of training				.05	

Criterion for inclusion: improvement in the squared multiple correlation (R^2) of .002 or more; for private schools, of .003 or more

The regression table shows roughly the same distributions as the correlation tables, but the differences are very illuminating. Below we discuss the results of these two tables for the four types of schools:

1. Urban State Schools

In the correlation table for urban state schools, among the parents variables mother's education is more important than father's education. The number of textbooks owned by the child is less important than the parents' education. The father's occupation (based on a scale of occupational status coded by the teacher) is much less important than the other parents characteristics. This measure may lack some reliability, since it was based on a code the teacher had to follow.

In the regression equation, father's education does not meet the criterion for inclusion, because it is very highly correlated with mother's education (.67). Number of textbooks is important, while father's profession remains present but not very important.

Number of teachers in the class during the year, attendance at kindergarten, teacher's experience in first grade, and teacher's experience in primary education are the highest school variables in the correlation table. In the regression equation, teacher's experience in primary education does not appear because it is highly correlated with teacher's experience in first grade. Number of teachers increases in relative importance, while attendance in kindergarten decreases, probably because of its relatively high correlation with father's and mother's education (.33 and .31) and number of textbooks (.18). Teacher's experience in first grade also has a low importance, since it is correlated with number of teachers during the year (.23).

As the most important school variable, the number of teachers in the class during the year warrants special attention. The contingency tables show the magnitude of the problem of teacher turnover during the year (See Appendix). 50% of the urban state school students had more than one teacher in class during the year. Rural state schools do only slightly better, but in both municipal and private schools less than 30% of the children have more than one teacher during the year. In Rio Grande do Sul transferences are made between schools throughout the school year. Within schools principals tend to allow transferences as well from class to class as vacancies occur.

The data show only relationships between variables, and we can only hypothesize the effect of one variable on the other. Teacher movement may cause more children to fail, since the newer teachers are less acquainted with the children, or the worst classes may cause greater teacher movement, because teachers wish to leave them. Statistical analysis does not allow us to measure the extent of both relationships. Since 1969 steps have been taken at the State Secretariat to reduce the level of teacher turnover.

The same problem of "causality" may arise with the relationship of teacher's experience with grades in language. The urban state schools have a system of entrâncias, in which the younger teachers are assigned to the more distant and poorer schools and the more experienced teachers may choose where to teach, usually in the better and more centrally located schools. A control for location of the school might take away much of the effect of teacher's experience. But these ambiguities do not mean that we can disregard these educational practices.

2. Rural State Schools

Rural state schools are greatly different from the urban state schools, and are administered separately within the State Secretariat. Thus it was important to consider them separately from urban state schools. Among the correlation coefficients only three - father's education, mother's education, and number of books owned by the child - are higher than .10, but the order of their importance is opposite to that of the urban schools, with books most important, followed by the father's education, then the mother's education. In the multiple regression equation number of text-books is most important, while mother's education does not meet the criterion for inclusion.

In the rural schools the number of books may be a better measure of the overall effect of the family than educational level, since parent's education in rural areas tends to be low (See Appendix No. 3). The greater importance of father's education over mother's education indicates the nature of rural life. The father goes to town to do the shopping, reads the newspaper if he can, and leads in community affairs. The mother stays at home, making only babies and meals, and thus has a lesser influence on the child. The opportunities for further sociological analysis of this finding are very great.

In the correlation matrix no school variable appears among those with a correlation of .10 or better with grade in language. In the multiple regression equation three meet the criterion of an improvement in the R^2 of .002 or better - number of teachers in class during the year, number of hours in the school day, and area per student.

The turnover of teachers in class during the year characterizes state schools, as we noted before. The number of hours in the school day is important only in rural schools. Perhaps in the rural areas the school has a greater function as a socializing agent than in the urban areas, since the family is more isolated from modern life. Thus time in school would be more important in rural areas. For a similar reason in rural areas children are much more likely to repeat the grade, and those who repeat do better than new entrants. (See Appendix No. 4)

The third important school characteristic - area per student - enters the equation only after the variable on number of students in the class

is entered. Then it has the opposite effect expected - the less the area per student, the higher his grade in language. Thus students do best in small classrooms with few students in the room; in large classrooms with few students they do poorly. The explanation here may be related to the inclusion of several classes in one room at the same time, i.e., the one room school house. The largest classrooms would have several classes in the room; thus the teacher would be less able to take care of those few in the first grade. The question of multiple classes in single rooms has not been addressed directly by this research. We have here one suggestion of the possible effect of the factor and for a much more profound study of the question.

3. Municipal Schools

About 80% of the municipal schools are rural. Since the research did not allow us to separate urban from rural schools, there may be extraneous effects based on the urban rural relationship.

Municipal schools show the lowest percentage of explained variance among all the school systems, probably because of a uniform low level in the quality of education offered by these schools, which are staffed by untrained teachers in small and unequipped buildings. At the same time, since municipal schools are run by the município, there may be differences within municípios which are overshadowed by differences between municípios.

As in the case of rural state schools, books have the highest correlation with grade in language. Mother's and father's education are of equal importance. In the regression equation books have a much greater weight than either mother's or father's education, which are of equal importance.

No school variables have correlations greater than .10 with grade in language,but two -number of services provided by the school and the educational level of the supervisor -improve the regression equation by more than .002 in the R^2. Number of school services most probably measures location (more urban areas) and size of the school, rather than an endogenous factor. The importance of supervisor's level of training is interesting. Since 80% of the teachers in municipal schools are untrained, the supervisor should be important for guidance and control of the system. The supervisor's training may also measure the extent to which the municipal government takes an interest in primary education, by contracting the best trained supervisors rather than untrained ones. The breakdown of supervisor's training is as follows: primary school, 3.2%; ginásio normal, 34.4%; ginásio não-normal, 3.3%; colégio normal, 47.8%; colégio não normal, 1.9%; superior normal 7.7%; superior nao normal, 1.6%.

4. Private Schools

Private Schools present a greatly different picture of relationships between grades in language and school and family characteristics. They are much more heterogeneous than public schools, since in the large city they are primarily "elitist," for the middle and upper classes, but some religious schools are part of the church's charitable activities in the slum areas. In the more rural areas (about 17% of all private school enrollment) private schools may be the only ones nearby and may accept all the children in the area. Even with these rural private schools, over 20% of the parents of children in private schools have some secondary or university education, compared to 8% in urban state schools, 1.5% in rural state schools, and 1.0% in municipal schools. (See Appendix No. 3).

Mother's and father's education have the highest correlations. Father's profession is also high, perhaps because of the heterogeneity of occupations among urban schools, but number of books is somewhat less important. Number of books may not be a good measure of economic status of the family, since so many students in private schools are able to afford books. Only 6% have no textbooks, compared to 15 to 20% in public schools. (See Appendix No. 3). In the multiple regression equation mother's education is most important, followed by father's education and number of books. Father's profession does not meet the criterion for inclusion in the table.

The school variable with the highest correlation coefficient is that of attendance in kindergarten. In private schools 32.5% of the children go to kindergarten. (See Appendix No. 3). (The absence of this variable from the equation for the predominantly rural schools does not negate its potential importance if kindergartens were provided in the future). Two variables - presence of a school lunch and of an agricultural club - have high negative correlations with grade in language. The presence of an agricultural club measures the difference between the rural private schools which are open to all social classes, and which have lower pass rates, and the elitist urban schools. The school lunch also measures social class, since the richer schools do not supply free or low-cost lunches to their children. Total enrollment, number of classes supervised, director's training, and teacher's training may also measure urban rural differences, as well as being highly correlated with parents's education.

For a view of the independent effect of these characteristics, we need to turn to the regression equation. The criterion for inclusion in the equation is an improvement in the R^2 of .003 rather than .002, in order to keep the table from becoming too large. Among the school characteristics with high correlations, only attendance in kindergartens and number of teachers during the year appear.

Three other characteristics have relationships to language independent of the effect of the parents high enough for them to meet the criterion for inclusion in the table. One is a negative effect of area per student, the less area, the better the child does. This may be a measure of the

urban-rural relationship. The other two are contradictory. The experience of the principal in primary education is negatively related to pass rates, while his experience in the job as a principal is positively related. Thus the principals with the highest achieving students are those with little experience in primary teaching, but much experience in their job. Principals with a great deal of primary school experience may be those in more isolated and rural areas, as well as those with lower levels of training. The interesting fact here, though, is the importance of the principal, who does not appear in any of the other equations. In the private schools principals have great control over their schools, and are able to set the tone of the learning process and the attitude of their teachers.

IV. CONCLUSIONS AND RECOMMENDATIONS

In this section we look at two areas for recommendations. The first is in the development of educational policies to improve student achievement. The second is in research both to refine and to test further the hypotheses which have arisen through this analysis.

A. Recommendations for policy changes in primary education

This research brings to focus a central controversy about education today. Is the school the mirror of the old society, the perpetrater and insurer of social norms and social structure, or is it the creator of the new society, forcing change by the knowledge diffused among the young? The controversy even now finds itself argued in economic tems - is the school a "consumer" or a "producer" in the economy?

In the past the school was most clearly the principal institution for the promulgation of social structures. Now in the United States as in Brazil we are asking the school to break its links with the society that gives it its children, and to create new links with the perceived needs of tomorrow's society rather than yesterday's.

This research suggests the difficulty of breaking the links between the effect of the society and the achievement of the child. We found that 75% or more of the explained variance in grade in language is based, either directly or indirectly, on measures of the socio-economic background of the child - mother's education, father's education, father's occupational level, and the number of textbooks - while some portion of the remaining 25 or less per cent may be based on other geographical factors, such as those of urban-rural location, or the difference between the poor suburbs of large cities and their more developed central portions.

But we note here that this research is limited to measurements within the present educational system. It does not propose to change the entire system but to tinker with its parts. Thus it cannot explore the possibility of a radical change in the methods of teaching, departure from the one teacher-one class relationship to a centralized system using the paraphenalia of educational technology, especially television, to infuse a new efficiency to the learning process. Putting aside this possibility, what does the research tell us?

1. Books

We suggest that the best way to improve student achievement is to supply textbooks to all first graders. While we have argued that textbooks measure economic status of the family, the school can take the responsibility of supplying them. By supplying books the school would break one of the links between socio-economic level and student achievement.

The need for free textbooks has already been recognized by the federal government in their program for the distribution of free textbooks (COLTED). This program has reached children in all the state capitals and selected other cities. The COLTED program has also attempted to select the better textbooks available and to train teachers in their use.

One of the problems of free book distribution is cost. A way of reducing costs is to supply books only to those students who cannot afford them. But the problem of defining who could and could not afford them would be grave. Another way is to decide which areas and schools most need books, then distribute them to all students within those areas or schools. The data emphasizes the need to begin in public schools in the poor urban and rural areas.

2. Teacher training

The second policy suggestion that comes out of this research is based on a negative result: in no case does the level of teacher training have a relationship with the pass rates. When we look at the contingency tables, neither is there a difference between teachers trained in normal schools and others. The only difference is that better trained teachers tend to have higher class students. (See Appendix No. 2). But educators emphasize the necessity to reduce the number of "lay" teachers, since about 48.1% of the children have teachers without any normal school training.

As we noted before, one explanation for the lack of relationship is that the child in a class with a better trained teacher may be learning more, but the standards of the trained teacher may be so high that the percentage of children failed may be the same as for untrained teachers. Even if this is the case, this does not show that teacher training is fulfilling its responsibility. Why should trained teachers have to show they are "good" teachers by having higher standards?

The lack of any relationship between grade in language and teacher training does not mean that we should do away with teacher training, but that we should try to reform it so that its potential influence can be developed. Teacher training most probably prepares teachers to accept the present system of high failure rates, to feel comfortable failing 40 to 50% of their students. Teacher training may also be unable to bridge the differences between most teachers - in the middle class - and most students - in the lower class; which lead to the alienation of the lower class child from the classroom and to further decreases in the pass rates. How to restructure teacher education to make it "lower-class" and "pass" oriented is the central question, rather than simply the training of lay teachers.

3. Teacher turnover in State Schools

A third priority concerns the state schools, both urban and rural, the need to reduce teacher transfers during the school year. Within the state schools vacancies during the year are filled by transfering teachers from less desirable to more desirable positions, based on their experience. Thus one transfer produces a chain of transfers during the year. Progress is being made on this item in Rio Grande do Sul, which may appear in the data for 1969 and 1970. Ultimately the central administration could process all transfers at one time between the school years. At the same time ways need to be developed to reduce the practice within many state schools of assigning to new teachers the least desirable classes and switching teachers to the more desirable classes, usually the upper grades.

Linked with the problem of teacher turnover is the problem of entrâncias, in which the least experienced teachers have to work in the outlying poorer schools of the urban areas. The data suggest the need for some kinds of incentives for teachers in the poorer schools, while still retaining recognition of the services of experienced teachers.

4. Kindergartens

We asked the following question: Do repeaters have higher pass rates than new entrants? The answer, in general, was yes for the children of parents with low education, but the effect tended to disappear among children with parents of primary education and above. At the same time repeaters tend to be children of parents with low education. (See Appendix No. 4)

Examining kindergartens, we discovered that children of all educational levels who went to kindergarten tend to do better than those who did not go to kindergarten, but most children who go to kindergarten are of high education parents.

From these data we hypothesize that children of lower education parents are not "socialized" as quickly or as well by the parents, since the parents themselves are not functioning in a "modern" society. So the child enters school without the social maturity of the child of better educated parents, and fails the first year. For him time in the school counts more than for the child of better educated parents.

But repeating carries with it the stigma of failure, so that while the child may benefit from the extra year, he may lose from the discovery of being inferior to those who passed. One way out of this dilemma may be to install kindergartens in the poorer and more rural areas, so that the child can benefit from a year in the school without the stigma of failure. This would require incentives to make certain that parents would send their children to such kindergartens before they

would normally send them to school. These programs could be similar to those of "Head-Start" in the United States, located in the slums of big cities.

5. The role of the principal and the supervisor

In private schools the principal's experience is highly related to pass rates, while it has no relationship in state and municipal schools. The need here is to find why principals count in one system, then attempt to create those conditions in the other systems. The principal in private schools has the autonomy to hire and fire teachers and to set the tone of the educational process in his school. The principal in the state school is more of an administrative agent than a leader; while municipal schools are usually so small that the principal is synonymous with the teacher. Here we have an argument for giving more autonomy to the principal in the state schools.

In the same manner only in the municipal schools does the supervisor have a significant relationship to pass rates. Why is the supervisory system effective in municipal schools but not in state schools, and how can we transfer the characteristic to the state schools?

6. Rural schools

The data show that rural state and municipal schools have the lowest relationships between school and parent characteristics and grade in language. The need here is to strengthen both types so that the school begins to count more than in the past.

In particular there are needs to:

a. Improve the supervisory system, especially in rural state schools.

b. Give more hours of schooling, up to five hours a day.

c. Eliminate as much as possible the one room schoolhouse and multi-grade classrooms.

B. Recommendations for Research in Education

In terms of research in education we need to discuss the continuation of the research in Rio Grande do Sul as well as the more general question of needs for educational research in Brazil.

1. Research on Primary Schools in Rio Grande do Sul

The research in Rio Grande do Sul is now entering its third year, in which data for all grades of primary school were gathered in 1969 and

are now ready for the computer. The analysis will allow studies of the cumulative yearly effect of the school to be made as well as the extent educational resources are distributed equally by grade. Thus the analysis will show distribution of school characteristics and their effects on language by school region, by school type, by parents' education, and by grade.

The data can be subjected to the same treatment described here. One problem is that the reliability of grade in language may decrease in the higher grades. This may be combatted by using grade in mathematics, or by combining pass rates and dropouts to get an estimate of the student flow; and using this as the dependent variable.

Ideally this data should be linked with other statistical sources, both to check how many schools were missed and to suggest the possibility of use of the questionnaires themselves for control of regions and even schools. Data of this scale should be used directly for administrative control by school and by region, as part of a "system" of information, as well as in research. Such a linkage with administration requires a more rationalized structure in the Secretariat of Education and is related to a Center for Information which persons at the Secretariat and the State Council of Education in Rio Grande do Sul are attempting to develop.

Both the 1968 and 1969 data are valuable for researchers and planners in Rio Grande do Sul and elsewhere who are interested in education. The data are pregnant with many possibilities for research into schooling and its relation to society, only a portion of which has been presented in this document.

2. Research on Primary Education in Brazil

The principal technical problem in this research is the use of the "subjective" measure of the student's grade in language as the dependent variable. Another form of the research, partly as a check on this one, should give standardized achievement tests to a small sample of students, then calculate the effect of the same characteristics as those presented here, as well as whether the child passed the final examination in language. Then we would have an independent estimate of the validity of the grade in language as a measure of achievement.

We should also note here that achievement in language is not the only outcome of primary schools. Researchers need to consider measures of socialization and of "efficacy" (i.e. a sense of personal capacity to solve problems) if they are to measure completely the effect of the school.

A more important question is that of the value of large scale "snapshot" research as this is. It may easily overlook the dynamics of changes in schools. It should be superseded by more focussed studies,

experimental and longitudinal, to test the hypotheses which arise here. For instance, it would be easy to supply books to all the children in a município, see the mechanisms by which the books are utilized, and see if the pass rates improve significantly. An experimental program might even cross books with type of teacher training and some kinds of supervision. If achievement does not improve much, then books are measuring the economic effect of the family rather than a school characteristic. If the supplying of books influences language achievement significantly, then we would have a double proof of the need to supply them to all schools.

Thus the broad stroke approach presented here is very expensive; a more judicious use of resources should be in work of diagnosis and evaluation on a small scale but with specific policy objectives in mind. The broad stroke approach here can be used with already existing data, much of which is susceptible to multivariate analyses. The data of the Serviço de Estatística da Educação e Cultura is one rich source, which has begun to be used. Within state secretariats are other sources, which would require keypunching small samples of questionnaires on hand.

The original research which needs to be done should be "causal." Many surveys are made simply to describe how many blackboards there are in every município; little research as yet tackles the essential question of the causes of failure, as this research has attempted.

But the causal question is very difficult. What are the causes of failure in first grade in Rio Grande do Sul? Our data suggests that standard measures of school and parents characteristics can explain only 10% of the variance in grade in language. Leaving aside questions of the reliability of the measures, we conclude that the social and educational systems are designed to perpetuate their ways of treating the child and the learning process. Even while many seek to change this approach the dynamic of the system itself is able to subsume teachers, principals, and educational leaders.

Given this fact we have still suggested ways of changing the educational system by changing some of its internal characteristics. We have mentioned six possibilities in Rio Grande do Sul - the distribution of books, the improvement of teacher training, the reduction of teacher turnover, the installation of kindergartens in poor and rural areas, the strengthening of the principals' role and of the supervisory system, and a greater emphasis on rural education.

APPENDIX 1: QUESTIONNAIRE

The questionnaire which the CPOE distributed in 1968 to all first grade teachers in Rio Grande do Sul consists of two parts, a code book and a code sheet. The teacher was asked to fill in the appropriate codes for each of her students, as well as for her own background. The data on the principal and the school was filled in by the principal himself. The supervisor filled in the data on the supervisor and checked the results from the school.

Following receipt of the completed questionnaires, members of the CPOE checked the responses carefully both before keypunching and after.

A copy of the questionnaire is available from the Human Resources Office of USAID or from the CPOE.

APPENDIX 2: CORRELATION MATRICES

The body of this report has attempted to present the most salient findings in the most efficient manner. But the data is richer than the explanations given. Persons with other interests and desires may wish to see some of the raw tables to try to check some of their own hypotheses.

In this event we have made available correlation matrices to give the reader a more complete view of relationships found. Five correlation matrices 42 x 42 are available for each of the types of schools plus the sum of all the schools. The N encountered in the correlations (the same as that of the regression correlations) is as follows:

	N in correlations	N of sample
Urban state schools	4394	6070
Rural state schools	1948	2624
Municipal schools	7744	9930
Private schools	1113	1399
All schools	4595	20120

Within each of the four types of schools the N's are somewhat lower than the actual number of students in the sample because (a) only students with final grades in language were included and (b) the program used was such that if a blank was encountered in any of the variables all the data for that student was eliminated from the computations. The N in the correlations for "all schools" is based on a 25 per cent sample of the sample N.. This was done because an analysis of 20,000 cases would have used excessive computer time. The sum of the N's for each of the types of schools in the sample does not equal the sum of the data for all schools because 97 cards were coded blank for the variable on type of school.

For correlation and regression analysis the N's are very satisfactory. The reader can get an idea of their usefulness by the following table, which shows the lowest correlation values significant at .01 and .05 (to the nearest half of a decimal):

	Lowest Correlation Coefficient Significant at	
	.01	.05
Urban state schools	.035	.025
Rural state schools	.060	.040
Municipal schools	.030	.020
Private schools	.070	.050
All schools	.035	.025

In this Appendix we do not present all the correlation matrices, but they are available from the Human Resources Office of USAID. Since they are from the computer output, the variables are named by a code, which we explain below:

Code name		Explanation
1.	DOCTOR	Presence of doctor in school (lowest number--presence)
2.	DENTIST	Presence of dentist in school (lowest number--presence)
3.	ARTT	Presence of art teacher in school (lowest number--presence)
4.	MUSICT	Presence of music teacher in school (lowest number--presence)
5.	GYMT	Presence of gym teacher in school (lowest number--presence)
6.	LIBRARIA	Presence of librarian in school (lowest number--presence)
7.	LUNCH	Presence of lunch in school (lowest number--presence)
8.	PTA	Presence of PTA in school (lowest number--presence)
9.	AGRICCLB	Presence of agricultural club in school (lowest number--presence)
10.	NUMSESSI	Number of sessions in school
11.	HOURS	Number of class hours per day
12.	ENRGRADE	Enrollment in grade
13.	ENRSCHL	Enrollment in school
14.	SUPTRAIN	Supervisor's level of training (lowest number--primary)
15.	SUPLNGTH	Length of supervisor's special training courses
16.	SUPEXPPR	Supervisor's experience in primary education
17.	SUPEXJOB	Supervisor's experience in the job
18.	SUPNUMCL	Number of classes supervised by supervisor
19.	PRITRAIN	Principal's level of training (lowest number--primary)
20.	PRILNGTH	Length of principal's special training courses
21.	PRIEXPPR	Principal's experience in primary education
22.	PRIEXJOB	Principal's experience in the job
23.	PRIEXPGR	Principal's experience in first grade
24.	TCHTRAIN	Teacher's level of training (lowest number--primary)
25.	TCHLNGTH	Length of teacher's special training courses
26.	TCHEXPPR	Teacher's experience in primary education
27.	TCHEXPGR	Teacher's experience in first grade
28.	TEACHERS	Number of teachers in the class during the year
29.	OCCFATH	Father's occupational level (lowest number--untrained)
30.	EDFATH	Father's educational level (lowest number--no education)
31.	EDMOTH	Mother's educational level (lowest number--no education)
32.	KINDER	Attendance of the child in kindergarten (lowest number--attendance in kindergarten)
33.	AGE	Age of child
34.	YEARS	Number of years child is in first grade
35.	HEALTH	Teacher's estimation of child's health (lowest number--very good health)

Code name		Explanation
36.	BOOKS	Number of textbooks owned by student
37.	LANGUAGE	Student's grade in language (lowest number--very good grade)
38.	MATH	Student's grade in mathematics (lowest number--very good grade)
39.	SIZCLASS	Number of students in class
40.	AREAPERS	Area of classroom (square meters) per student
41.	SERVICES	Sum of all specialized teachers in school (lowest number--most specialized teachers)
42.	AGEENTER	Age of the child when he entered primary school

We do present here one set of correlations which the reader may find interesting. These are the correlations between all the variables and mother's education. We have discussed the relationships between parents and school characteristics in the text, but this table will give an idea of the extent of the effect of the parents on various school services, etc.

TABLE 2-1 CORRELATIONS OF ALL VARIABLES WITH MOTHER'S EDUCATION

Variables	Type of School				
	All schools	Urban state	Rural state	Municipal	Private
DOCTOR	-.13	-.08	-.03	-.04	-.02
DENTIST	-.13	-.12	-.04	-.06	.08
ARTT	-.09	-.04	.02	.05	-.11
MUSICT	-.12	-.06	.00	-.06	-.16
GYMT	-.10	-.02	.01	-.06	-.13
LIBRARIA	-.17	-.12	-.05	-.07	-.09
LUNCH	.02	.02	.02	.00	.26
PTA	-.06	-.01	-.03	-.02	-.07
AGRICUB	.03	.04	.04	-.02	.14
NUMSESSI	.12	.03	.00	.06	-.02
HOURS	.00	.00	.03	-.04	.03
ENRGRADE	.16	.07	-.03	.06	.07
ENRSCHL	.24	.19	.07	.06	.14
SUPTRAIN	.16	.03	.03	.07	.06
SUPLNGTH	.12	.06	.03	.01	.07
SUPEXPPR	.10	.03	.02	.01	.00
SUPEXJOB	.06	.04	.02	.01	.06
SUPNUMCL	-.13	-.09	-.09	-.04	-.13
PRITRAIN	.26	.10	.06	.07	.17
PRILNGTH	.02	.07	-.04	-.03	.16
PRIEXPPR	.11	.13	.00	.04	-.00
PRIEXJOB	.02	.05	-.03	.01	-.03
PRINUMCL	-.02	.07	-.03	.01	-.04
TCHTRAIN	.24	.10	.04	.11	.21
TCHLNGTH	-.06	.02	-.07	-.02	-.01
TCHEXPR	.07	.12	.00	.00	-.01
TCHEXPOR	.04	.14	-.01	-.01	.02
TEACHERS	-.05	-.12	-.01	.02	-.14
OCCPATH	.20	.40	.11	.12	.50
EDPATH	.59	.67	.54	.56	.76
EDMOTH	1.00	1.00	1.00	1.00	1.00
KINDER	-.31	-.31	-.03	-.10	-.27
AGE	-.24	-.26	-.23	-.10	-.32
YEARS	-.10	-.15	-.10	-.06	-.16
HEALTH	-.19	-.18	-.15	-.12	-.27
BOOKS	.20	.25	.10	.12	.27
LANGUAGE	-.25	-.25	-.11	-.12	-.32
MATH	-.23	-.25	-.11	-.12	-.28
SIZCLASS	.05	.01	-.07	-.06	.12
ARTPAPERS	-.02	.03	.02	.07	-.04
SERVICES	-.13	-.12	-.01	-.06	-.11
AGEENTER	-.20	-.21	-.19	-.15	-.25

APPENDIX 3. DESCRIPTIVE CONTINGENCY TABLES

Although this paper has not meant to be descriptive, we believe it useful for the reader to have an idea of the distribution of some of the key variables discussed. In the following tables we present the distribution of the following variables, for each of the four types of schools. All the tables relate to data gathered on first grades in Rio Grande do Sul at the end of 1968. Blanks are not included in the percentages of N's:

1. Grade in language of student
2. Mother's educational level
3. Father's educational level
4. Principal's type of training
5. Teacher's type of training
6. Number of teachers in the class during the year
7. Number of class hours per day
8. Number of textbooks owned by the student
9. Attendance of the student in kindergarten
10. Number of years in first grade of child
11. Age at entrance into first grade of child

Other tables giving the distribution of all variables are on file at USAID and the CPOE.

TABLE 3-1. Grade in Language of Student (only those Students in School at End of Year)

Grade	Type of School			
	Urban State	Rural State	Municipal	Private
Very good	28.3%	16.2%	18.5%	37.0%
Good	23.4%	22.4%	21.1%	24.5%
Fair	10.1%	15.9%	17.1%	14.5%
Insufficient	10.0%	17.5%	19.0%	12.6%
Very poor	28.2%	28.1%	24.3%	11.3%
Sum	4847	2208	8470	1247

TABLE 3-2. Mother's Educational Level

Educational Level	Type of School: Urban State	Rural State	Municipal	Private
None	25.2%	32.1%	37.7%	14.2%
Incomplete Primary	40.6%	52.8%	51.1%	32.1%
Complete Primary	28.7%	14.3%	10.5%	38.8%
Any Secondary	5.0%	0.8%	0.6%	13.5%
Any University	0.5%	0.1%	0.0%	1.4%
Sum	5922	2606	9836	1360

TABLE 3-3. Father's Educational Level

Educational Level	Type of School: Urban State	Rural State	Municipal	Private
None	20.7%	27.5%	32.5%	11.2%
Incomplete Primary	41.4%	55.2%	52.2%	30.2%
Complete Primary	30.8%	15.7%	12.1%	38.3%
Any Secondary	6.9%	1.4%	0.7%	15.3%
Any University	1.3%	0.2%	0.1%	4.9%
Sum	5642	2576	9678	1325

TABLE 3-4. Principal's Type of Training

Type of Training	Type of School: Urban State	Rural State	Municipal	Private
Normal Schools				
Normal Ginásio	18.1%	57.8%	10.2%	17.5%
Normal Colégio	68.8%	12.0%	11.7%	30.1%
University-Pedagogical	10.3%	2.2%	0.7%	24.6%
Non-Normal Schools				
Primary	0.6%	11.3%	62.0%	6.8%
Ginásio	1.1%	14.1%	13.6%	8.6%
Colégio	0.4%	1.8%	1.5%	3.4%
University	0.7%	0.9%	0.3%	11.1%
Sum	6062	2609	9830	1387

TABLE 3-5. Teacher's Type of Training

Type of Training	Type of School: Urban State	Rural State	Municipal	Private
Normal Schools				
Normal Ginásio	24.5%	53.0%	8.4%	20.3%
Normal Colégio	63.4%	13.2%	11.4%	48.6%
University-Pedagogical	7.0%	1.4%	0.5%	5.4%
Non-Normal Schools				
Primary	1.9%	16.9%	64.8%	10.6%
Ginásio	2.3%	12.9%	13.8%	13.2%
Colégio	0.4%	1.4%	0.8%	1.0%
University	0.3%	1.1%	0.2%	0.9%
Sum	6045	2608	9877	1382

TABLE 3-6. Number of Teachers in the Class during the Year

Type of School

Number of Teachers	Urban State	Rural State	Municipal	Private
1	50.0%	52.9%	71.4%	71.1%
2	32.6%	34.1%	23.6%	25.1%
3 +	17.4%	13.0%	5.0%	3.8%
Sum	5805	2560	9680	1349

TABLE 3-7. Number of Class Hours per Day

Type of School

Hours	Urban State	Rural State	Municipal	Private
2	1.5%	2.6%	0.5%	0.3%
3	14.2%	4.1%	10.9%	10.0%
4	79.5%	84.7%	83.6%	83.0%
5 +	4.8%	8.6%	5.0%	6.6%
Sum	6000	2565	9757	1384

TABLE 3-8. Number of Textbooks Owned by Student

Number of Books	Type of School: Urban State	Rural State	Municipal	Private
0	20.5%	21.1%	15.9%	6.1%
1	61.2%	67.0%	74.1%	42.5%
2 +	18.2%	13.4%	10.0%	51.4%
Sum	5970	2595	9868	1388

TABLE 3-9. Attendance of the Student in Kindergarten

Attendance in Kindergarten	Type of School: Urban State	Rural State	Municipal	Private
Yes	16.3%	2.5%	1.8%	32.5%
No	83.7%	97.5%	98.2%	67.5%
Sum	5653	2474	9195	1325

TABLE 3-10. Number of Years in First Grade of Student

Years	Type of School: Urban State	Rural State	Municipal	Private
0-1	62.9%	61.0%	70.3%	75.4%
2	25.7%	29.3%	30.1%	20.0%
3 +	11.3%	9.7%	9.7%	4.6%
Sum	5993	2614	9885	1391

TABLE 3-11. Age at Entrance into First Grade of Child

Age	Type of School: Urban State	Rural State	Municipal	Private
6	10.3%	12.3%	15.4%	22.8%
7	49.0%	40.4%	37.8%	48.6%
8	22.0%	24.3%	20.8%	18.4%
9	9.3%	11.1%	11.0%	5.1%
10 +	9.4%	11.9%	15.0%	5.2%
Sum	6003	2536	9481	1372

APPENDIX 4. EXPLICATIVE CONTINGENCY TABLES

While the text of this paper has not used contingency tables to explain pass rates in language, we present here five tables which relate pass rates to school characteristics, with controls for parents' education and type of school. These tables are interesting because (1) they give a clear picture of t. relationships between the variables, and (2) they show varying effects of school characteristics depending on level of parents' education. These tables measure the same school characteristics as in the previous appendix, with the omission of principal's training, teacher's training, and number of class hours, which show no relationships in most cases.

Two very interesting tables are the last ones, which show that repeaters tend to do better than new entrants, and that, among new entrants, older children tend to do better than younger children. But these effects tend to disappear among more highly educated parents.

This is related to the idea that the school counts more for children of lower-education parents, since they do not train the child at home. The effect of age may explain very well why many parents send their children to school later than 6 or 7 years of age: They may realize that their children are not yet "mature" enough to take advantage of the schooling offered. The tables also show very clearly the differences in pass rates among parents educational levels and among types of schools.

TABLE 4.1 -

RELATIONSHIP BETWEEN PASS IN LANGUAGE AND TEACHER TURNOVER, CONTROLLED FOR PARENTS' EDUCATION AND TYPE OF SCHOOL

Number of teachers during year	Parents' Education: None	Incomplete Primary	Complete Primary	Secondary and University
	Urban State Schools			
	% (N)	% (N)	% (N)	% (N)
1	56.7 (379)	64.3 (914)	78.4 (780)	89.0 (263)
2	52.5 (282)	54.4 (652)	64.3 (473)	78.4 (97)
3 +	33.3 (192)	44.5 (342)	53.1 (211)	68.3 (41)
	Rural State Schools			
1	47.1 (297)	58.5 (624)	71.9 (199)	
2	47.2 (197)	50.3 (352)	60.8 (120)	
3 +	35.4 (65)	45.7 (140)	51.2 (43)	
	Municipal Schools			
1	49.3 (1903)	58.8 (3261)	68.6 (710)	
2	48.4 (576)	56.5 (1079)	68.1 (248)	
3 +	51.3 (119)	55.9 (229)	39.4 (71)	
	Private Schools			
1	62.8 (78)	67.5 (243)	85.3 (348)	92.3 (221)
2	36.8 (38)	55.8 (96)	81.7 (104)	78.8 (42)
3 +	28.6 (7)	66.6 (15)	62.5 (8)	80.0 (5)

Explanation of this and following tables: the numbers in the cells are percentages of those who passed in language for each level of parents' education within each type of school. The number in parentheses is the total N of those who passed and failed. Thus in urban state schools, among children with parents of no education, 56.7% of the 379 with one teacher during the year passed (while 43.3% failed), compared to 52.5% with 2 teachers and 33.3% with 3 or more teachers. Data for children of parents of secondary and university training in rural state and municipal schools are not included because the N is too low.

TABLE 4.2

RELATIONSHIP BETWEEN PASS IN LANGUAGE AND NUMBER OF TEXTBOOKS OWNED BY THE STUDENT, CONTROLLED FOR PARENTS' EDUCATION AND TYPE OF SCHOOL

Number of books	Parents' Education: None	Incomplete primary	Complete primary	Secondary and university
Urban State Schools				
0	% (N) 34.0 (238)	% (N) 40.0 (402)	% (N) 44.3 (194)	% (N) 75.6 (41)
1	52.8 (547)	58.9 (1273)	65.3 (995)	81.5 (205)
2 +	64.9 (97)	76.4 (301)	88.7 (337)	81.0 (174)
Rural State Schools				
0	24.4 (135)	42.2 (185)	60.6 (33)	
1	49.9 (381)	53.7 (806)	61.0 (254)	
2	66.6 (63)	70.4 (152)	72.6 (95)	
Municipal Schools				
0	39.1 (527)	48.2 (577)	58.9 (112)	
1	50.6 (1895)	57.8 (3580)	65.3 (767)	
2 +	62.2 (225)	71.0 (521)	78.6 (168)	
Private Schools				
0	36.8 (19)	38.5 (26)	80.0 (15)	60.0 (5)
1	53.6 (69)	61.5 (182)	75.7 (185)	76.6 64)
2 +	61.0 (41)	72.7 (165)	87.6 (275)	94.2 (206)

TABLE 4.3

RELATIONSHIP BETWEEN PASS IN LANGUAGE AND ATTENDANCE IN KINDERGARTEN, CONTROLLED FOR PARENT'S EDUCATION AND TYPE OF SCHOOL

Parents' Education

Attendance in Kindergarten	None	Incomplete primary	Complete primary	Secondary and university
Urban State Schools				
	% (N)	% (N)	% (N)	% (N)
Yes	49.2 (63)	67.9 (190)	80.2 (298)	90.4 (218)
No	48.4 (760)	56.1 (1661)	64.4 (1154)	78.1 (187)
Rural State Schools				
Yes	33.3 (9)	60.7 (28)	65.0 (20)	
No	45.6 (529)	54.4 (1058)	64.9 (333)	
Municipal Schools				
Yes	38.1 (21)	73.1 (52)	68.6 (35)	
No	49.5 (2136)	57.9 (4262)	67.2 (947)	
Private Schools				
Yes	68.8 (16)	70.1 (67)	90.1 (172)	92.1 (165)
No	50.5 (107)	64.0 (280)	79.1 (287)	84.7 (98)

TABLE 4.4

RELATIONSHIP BETWEEN PASS IN LANGUAGE AND NUMBER OF YEARS IN FIRST GRADE, CONTROLLED FOR PARENTS' EDUCATION AND TYPE OF SCHOOL

Parent' Education

Number of years	None	Incomplete primary	Complete primary	Secondary and university
	Urban State Schools			
	% (N)	% (N)	% (N)	% (N)
0 - 1	41.0 (473)	52.4 (1180)	66.2 (1042)	85.3 (361)
2 +	58.4 (409)	65.8 (800)	71.3 (480)	83.3 (60)
	Rural State Schools			
0 - 1	35.2 (315)	49.1 (743)	57.5 (240)	
2 +	58.0 (262)	63.6 (401)	79.4 (131)	
	Municipal Schools			
0 - 1	42.6 (1445)	51.2 (2787)	64.3 (664)	
2 +	57.2 (1205)	68.3 (1888)	71.6 (384)	
	Private Schools			
0 - 1	45.2 (73)	59.2 (243)	82.5 (377)	90.1 (243)
2 +	64.3 (56)	74.2 (132)	83.7 (98)	87.9 (33)

TABLE 4.5

RELATIONSHIP BETWEEN PASS IN LANGUAGE AND AGE OF STUDENT, CONTROLLED FOR PARENTS' EDUCATION AND TYPE OF SCHOOL - ONLY FOR NEW ENTRANTS

Parent' Education

Age of Student	None	Incomplete primary	Complete primary	Secondary and University
	Urban State Schools			
	% (N)	% (N)	% (N)	% (N)
6	36.0 (25)	50.0 (78)	68.7 (134)	91.4 (70)
7	35.8 (201)	50.9 (613)	67.8 (634)	88.3 (248)
8	39.1 (128)	53.4 (253)	66.3 (169)	87.5 (24)
9 +	45.0 (140)	58.6 (180)	69.3 (88)	73.3 (15)
	Rural State Schools			
6	29.4 (17)	38.2 (55)	52.4 (21)	
7	21.4 (117)	50.7 (379)	61.7 (115)	
8	35.5 (93)	49.2 (189)	65.0 (40)	
9 +	37.8 (98)	55.2 (134)	46.4 (28)	
	Municipal Schools			
6	28.3 (120)	43.8 (260)	60.8 (79)	
7	36.4 (516)	46.4 (1324)	65.3 (352)	
8	43.5 (315)	53.6 (621)	62.6 (155)	
9 +	49.6 (490)	63.1 (586)	65.6 (96)	
	Private Schools			
6	42.9 (14)	58.5 (41)	80.8 (78)	91.1 (90)
7	31.8 (22)	66.1 (115)	84.5 (220)	91.7 (120)
8	34.6 (26)	66.0 (47)	73.6 (53)	69.2 (13)
9 +	52.9 (17)	69.0 (29)	75.0 (24)	60.0 (4)